City of Honolulu

Honolulu High-Capacity Transit Corridor Project

May 5, 2009

Draft Before and After Study Plan

Section 1
Introduction

The City and County of Honolulu (City) is in the planning and environmental clearance stages of the development of a fixed guideway transit project, for the Honolulu High-Capacity Transit Corridor Project (HHCTCP). The HHCTCP is consistent with the planning and project development process defined by the Federal Transit Administration (FTA) under the New Starts funding program. As part of the eligibility requirements to obtain a full funding grant agreement, and in compliance with the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), the HHCTCP must implement a Before and After Study that describes and analyzes the impacts of various elements of the fixed guideway project. Further, SAFETEA-LU requires the development and submittal of a plan for the collection and analysis of various data and information.

1.1 Purpose of the Before and After Study Plan

The purpose of the Before and After Study Plan (Plan) is to provide guidance for what, when and how data and information will be collected at various times during the development of the project, prior to initiation of construction, and two years after full operations have begun. The Plan will be utilized primarily by City and County (City) staff and project consultants to collect data and analyze factors that impact the system's effectiveness as well as to gain insight on the reasons for differences, if any, between project projections (e.g., project costs, ridership, etc.) and actual results. The data collection, analysis, and study findings during project planning and development, implementation, and two years after operation have begun will result in the completion of the Before and After Study.

1.2 Regulatory Requirement

This plan meets FTA New Starts criteria, which state,

"Whereby sponsors seeking a Full Funding Grant Agreement (FFGA) for their New Starts project must submit to FTA a plan for the collection and analysis of information leading to the identification of the impacts of the project and the accuracy of the forecasts which were prepared during project planning and development. As a condition of receiving a FFGA, project sponsors must commit to carrying out the defined elements of the aforementioned plan, resulting in the completion of a Before and After Study." FTA's *Final Rule on Major Capital Investment Projects* (December 2000)

The completion of a Before and After Study, as defined by the Plan, is intended to help determine factors that may affect the costs and impacts of a major transit system, such as the HHCTCP, and to determine the effectiveness of the current planning tools used to develop a project. FTA's intent in conducting this Study and others is to *"improve practices in data collection, documentation and analysis of pre- and post- project*

performance, to generate reliable information for decision making, and enhance its technical support for the program."

Per FTA guidelines, information and data collected must include project scope, transit service levels, capital costs, operating & maintenance (O&M) costs, ridership patterns and revenues, so as to hold local agencies accountable for the soundness of forecasts prepared when seeking federal funding for transit projects. As required by SAFETEA-LU, this information will need to be provided during project planning, development, and design, as well as two years after revenue operations begins. Additionally, the results of the studies completed in a given year must be summarized by FTA in a Report to Congress, based on the key minimum characteristics listed above.

1.3 Study Funding

Funding for preparation of the Plan and completion of the Before and After Study is eligible to be included in the Baseline Cost Estimate for the Project. Federal participation in the Before and After Study may cover up to 80% of the total costs. This cost sharing mechanism is intended to encourage project sponsors to make a comprehensive data collection effort, useful for a wide array of local transit planning and performance monitoring activities.

Section 2
Project Description and Schedule

2.1 Project Background

The City and County of Honolulu Department of Transportation Services (DTS), in cooperation with the U.S. Department of Transportation Federal Transit Administration (FTA), is considering a project that would provide high-capacity transit service on the Island of Oahu between East Kapolei and Ala Moana Center, with future extensions to West Kapolei, the University of Hawai'i at Manoa (UH Manoa) and Waikiki (Figure 2-1). The eventual guideway length, including planned extensions, would be 29.18 miles and include 33 stations. The future planned extensions to West Kapolei, UH Manoa, and Waikiki will be pursued separately as independent projects with regard to environmental analyses, design and construction. As such, the City is currently planning and conducting conceptual engineering on an initial 20-mile portion between East Kapolei and Ala Moana Center, that will directly serve Pearl Harbor and the Honolulu International Airport (Figure 2-2). This Plan focuses on the initial 20-mile portion of the HHCTCP and is referred to as "the Project."

Figure 2-1: Study Corridor Map

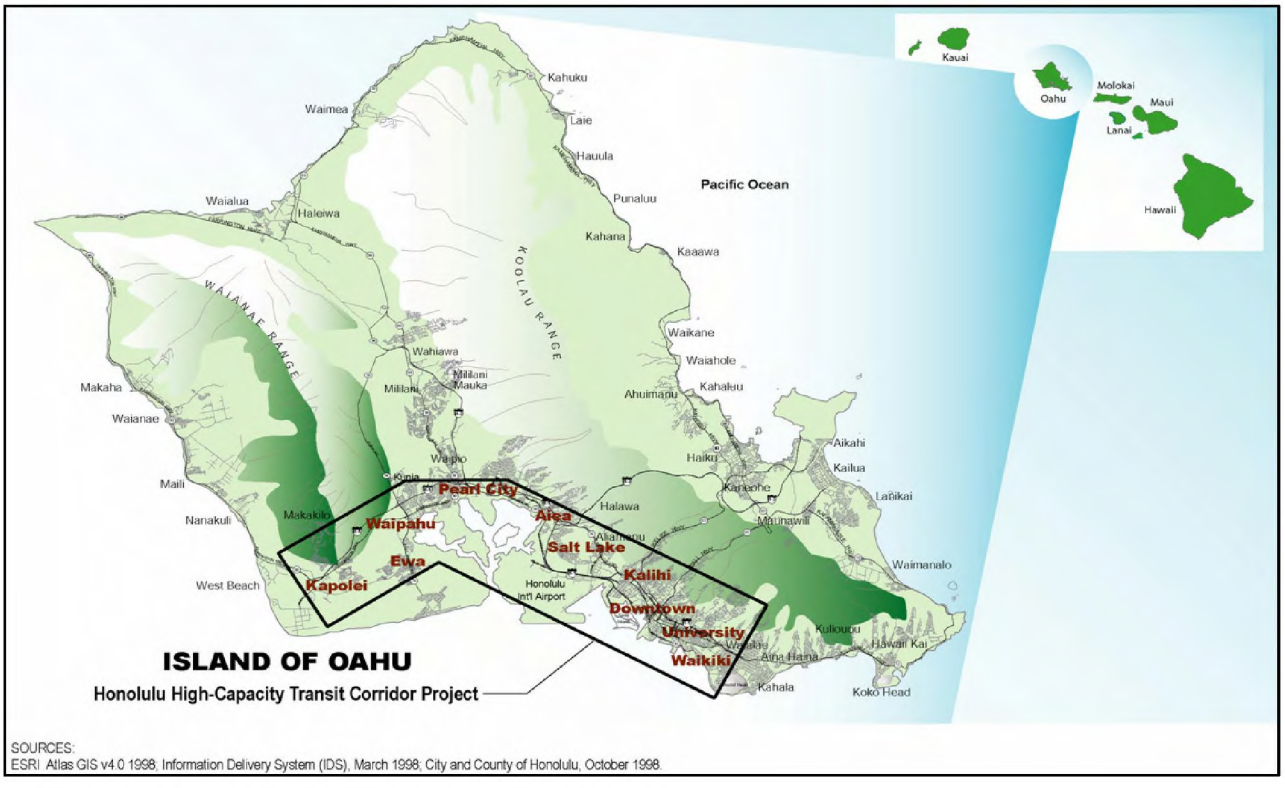
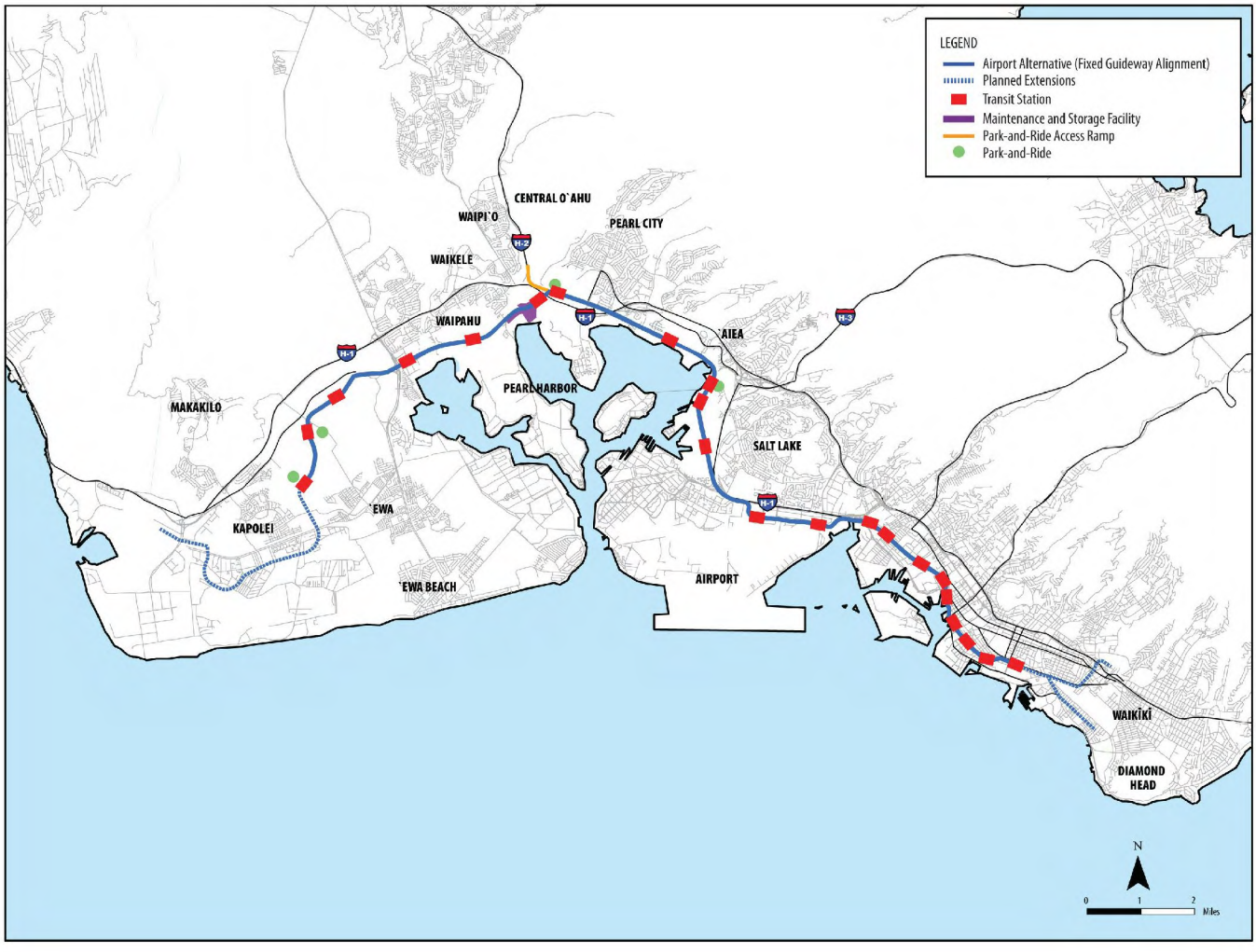


Figure 2-2: The Project – via Airport



2.2 The Project

The Project includes the construction and operation of a grade-separated fixed guideway transit system between East Kapolei and Ala Moana Center. The system would use steel wheel on steel rail technology, electrically powered from a third-rail system. The system may be either manually operated by a driver or fully automated. All parts of the guideway would be elevated, with the exception of 3,700 linear feet (0.7 mile) that is at-grade at the Leeward Community College station along Farrington Highway.

In addition to the 20-mile guideway, the construction of 21 stations and supporting facilities is planned. Supporting facilities include a maintenance and storage facility (MSF), transit centers, park-and-ride facilities, and traction power substations (TPSS). The maintenance and MSF will be constructed to service and store transit vehicles. It should be noted that although two sites are being evaluated in the Draft/Final EIS, only one MSF will be constructed to serve the Project. Some bus service would be

reconfigured to transport riders on local buses to nearby fixed guideway transit stations. To support this system, the bus fleet would be expanded.

2.3 Project Delivery

DTS intends to implement the Project in four overlapping design and construction segments over a nine year period. Segment I of the Project will be delivered following the Design-Build method and the remaining three segments (Segment II, III and IV) will utilize the Design-Bid-Build approach in which designers will prepare bid documents for individual construction packages. A detailed description of the project delivery is provided in the Project's Contract Packaging Plan.

2.4 Project Schedule

The project is currently in the environmental analysis and conceptual engineering phase. An Environmental Impact Statement (EIS) is being prepared pursuant to the National Environmental Policy Act (NEPA) (USC 1969) and Hawai'i Revised Statutes Chapter 343 Environmental Impact Statements. Public Hearings on the Draft Environmental Impact Statement (EIS) were held in December 2008. Preparation of the Final EIS is currently underway and is scheduled for review by FTA in August 2009. The Record of Decision is scheduled to be issued in October 2009.

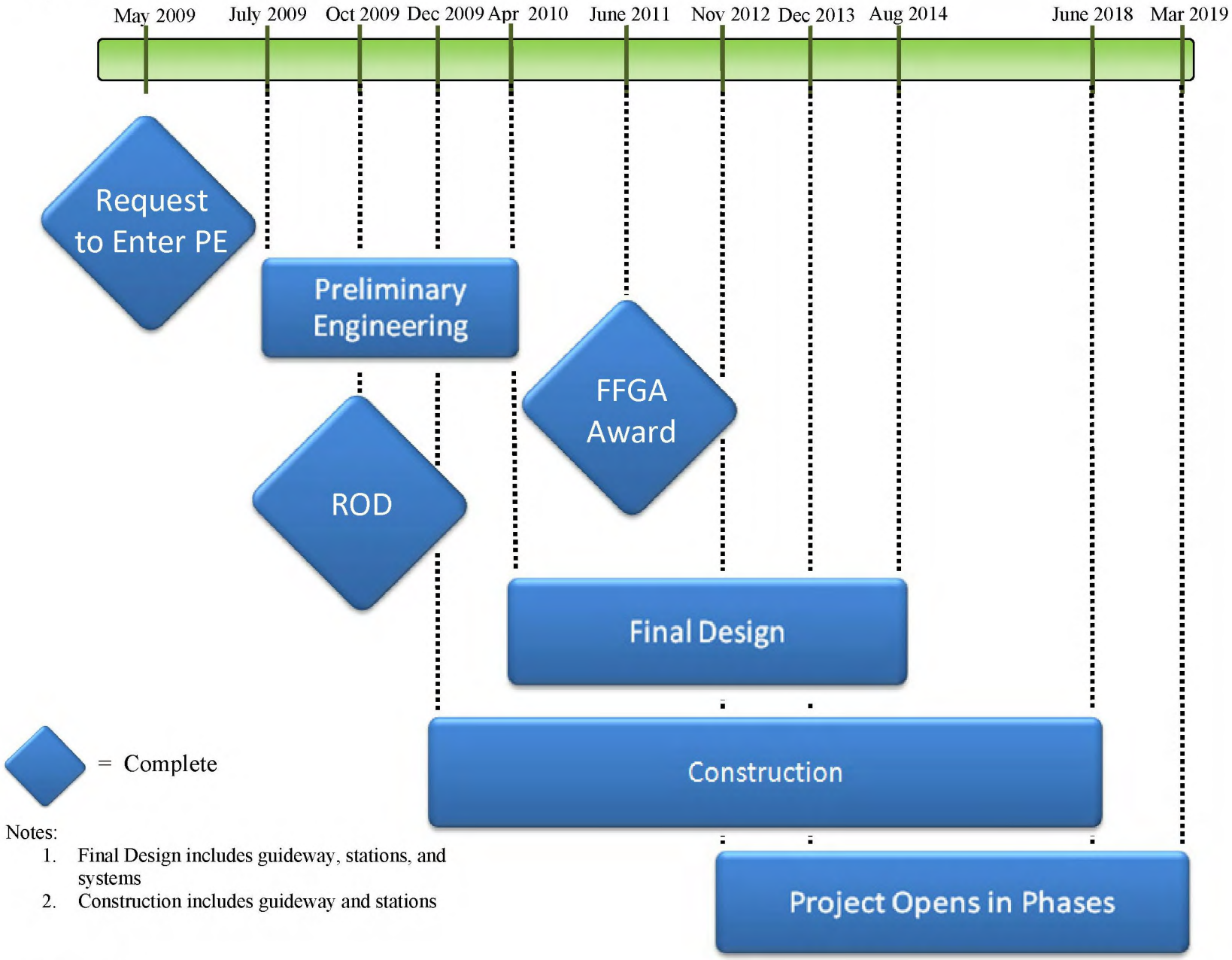
A request to enter into Preliminary Engineering (PE) is planned for submittal to FTA in May 2009 and approval by FTA in July 2009. Following completion of PE, approval to enter Final Design is scheduled for April 2010. The Full Funding Grant Agreement (FFGA) is scheduled for execution in June 2011. Table 2-1 below shows the start of construction and opening for revenue service for each of the four project segments.

The general project schedule is depicted in Figure 2-3. A more detailed listing of all of the major Project elements (i.e., completion of the EIS process, preliminary and final design and construction) is provided in the Project Management Plan, Appendix D.

Table 2-1: Project Segments: Construction and Opening Schedule

Segment	Boundary	Schedule
1 West Oahu/Farrington Highway	East Kapolei to Pearl Highlands	Begin construction: December 2009 Open: : July 2014 Note: Between Waipahu and Leeward Community College, limited service will open in November 2012.
II Kamehameha	Pearl Highlands to Aloha Stadium	Begin construction: November 2011 Open: January 2017
III Airport	Aloha Stadium to Lagoon Station	Begin construction: April 2012 Open: October 2017
IV City Center	Lagoon Station to Ala Moana Center	Begin construction: February 2013 Open: March 2019

Figure 2-3: Schedule – Honolulu High-Capacity Transit Corridor Project



Notes:
1. Final Design includes guideway, stations, and systems
2. Construction includes guideway and stations

Section 3
Responsibilities

The City and County of Honolulu Department of Transportation Services Rapid Transit Division (RTD) is responsible for the planning, development, and implementation of the Project. This includes responsibility for FTA's Before and After Study Plan development and implementation requirements. As described in Section 4, RTD has assigned staff or consultants to support the Plan elements for various milestones. The assignments may change over time, so updates concerning these and other changes over the course of the Study will be reported in the appropriate Milestone reports.

The following is a list of public agencies, project staff and consultants, as defined by the Project Management Plan (PMP), which may be involved as a lead coordinator or contributor to the implementation of the Plan. A list of contact persons from these agencies is provided in Appendix A. An Organization Chart for the PE/EIS phase of the Project can be found in the PMP in Section 2.4, Figure 6.

3.1 Public Agencies

Department of Transportation Services (DTS)

The Department of Transportation Services (DTS), under its Director, is responsible for implementing the Project, including overseeing compliance with FTA's programmatic requirements. Its overall responsibilities include planning, design, operations, and maintenance of the City and County of Honolulu's transportation systems, including City roadways. There are five divisions within DTS, including the Rapid Transit Division, which is described below.

Rapid Transit Division (RTD)

RTD is responsible for managing the Project and is headed by the DTS Second Deputy Director, who functions as the Project Executive (PExec). The PExec oversees the division staff, the Program Management Support Consultant, and the General Engineering Consultant responsible for preliminary engineering (PE) and preparation of the EIS for the Project, as well as Final Design (FD) and Construction of the Project. This division is responsible for preparing all Project-related documents, including management of the Before and After Study Plan and related deliverables required by FTA. RTD is also responsible for applying for, and administering, project-related FTA New Starts grants, coordination with FTA staff and the Project Management Oversight Consultant on Project-related matters.

O'ahu Metropolitan Planning Organization (O'ahuMPO)

The O'ahuMPO's function is to coordinate the activities of the transportation planning process on O'ahu. The planning itself is done largely by the City and the State

planning and transportation departments, which are the O'ahuMPO's participating agencies. The O'ahuMPO will provide population and employment forecasts and travel forecast modeling in support of the Study and related updates as required. The O'ahuMPO would also be involved in the on-board surveys that maybe required for the Study.

Department of Transportation (HDOT)

This Project is included in the State of Hawai'i Department of Transportation (HDOT) Statewide Transportation Plan. Coordination with HDOT is required for the Project due the Project's close proximity to or direct impacts on State Highway facilities. The HDOT will be relied on to provide traffic data as required for the Study.

Federal Transit Administration (FTA)

The FTA administers grants and oversees the expenditures of federal funds for mass transit projects. The FTA also contracts with a Project Management Oversight Contractor (PMOC), as described below, to act as an extension of its project management staff in monitoring a grantee's performance on a project. Additionally, the FTA provides technical assistance to local agencies preparing Before and After Studies. The PExec, with support from staff, will interface with the PMOC and the FTA on a regular basis and as necessary, should issues arise in implementation of the Study.

3.2 Contractors/Consultants

Program Management Support Consultant (PMSC)

The PMSC operates as an extension of City staff and provides in-house project management services. InfraConsult, LLC serves as RTD's PMSC and is integrated into the RTD team. The PMSC provides professional, technical, managerial, and other support functions needed to initiate and complete the PE/EIS phase of the Project. The PMSC's contract is monitored by the PExec. The PMSC is responsible for the development of the Before and After Study Plan, implementation, and oversight of various Study Milestone reports prepared by the GEC and/or RTD staff.

Project Management Oversight Contractor (PMOC)

The PMOC assists FTA in monitoring Project development and implementation, including oversight of the Before and After Study Plan and related Milestone Reports (deliverables). The consulting firm, Booz Allen Hamilton, serves as the PMOC. The PMOC will ensure that the development and implementation of the Project complies with all applicable statutes, regulations, and FTA guidelines as well as in accordance with the terms of the established grant agreements. The PMOC may be involved in supporting FTA in the review of Study Milestone Reports.

PE/EIS General Engineering Consultant (GEC)

The GEC, PB Americas Inc., is contracted as a consultant to RTD to conduct preliminary engineering (PE), and prepare the EIS and related technical studies, as well as public involvement for the Project. The GEC will also conduct engineering to support RTD's initial request to advance the Project to the Final Design phase of FTA's New Starts project development process. The GEC will be responsible for data gathering and technical analysis of Project costs (capital and operating and maintenance), revenues, and ridership in support of the Before and After Study. In addition, the GEC will be responsible for preparing the Milestone I and Milestone II technical reports.

Before and After Study Coordinator (BASC)

The BASC reports to RTD and is assigned to implement the Plan developed by RTD, as required by FTA's New Starts program. The BASC will be responsible for developing the Study Plan, coordination of on-board surveys if required, coordination and preparation of the Milestone Reports, and submittal of related deliverables to FTA. The BASC may be a contracted consultant, RTD staff, contractor or other team member, as assigned by the PExec.

General Construction Manager (GCM)

The GCM will provide services during the fixed facilities Final Design and construction phases, including Final Design oversight of the Engineering Design Consultants described below. The GCM will be responsible for documenting, reporting, and providing data/information on Project design and construction related changes for all Project segments to the BASC.

Engineering Design Consultant (EDC)

EDCs will be contracted to support RTD during all elements of final engineering design for Project Segments II through IV. The EDCs will report directly to the GCM. For the Before and After Study, the EDCs will be responsible for providing data/information related to Project design changes (e.g., guideway, stations, facilities, and systems), costs, vehicles, and changes to roadways to the GCM.

Section 4
Before and After Study Scope

The Before and After Study will span the planning, phased design and construction, and initial operation of the Project – an approximate 12 year span of time. The Study will document the study factors described below at three distinct milestone points: beginning with forecasted data and information developed during the planning phase (Milestone I), adjustments made in project scope and/or forecasts resulting from the project development phase at completion of Preliminary Engineering (PE) and beginning of construction of Segment I (Milestone II), and actual data derived from two years of Project implementation (Milestone III).

This Section describes the specific details of the processes by which the Before and After Study will be developed and completed.

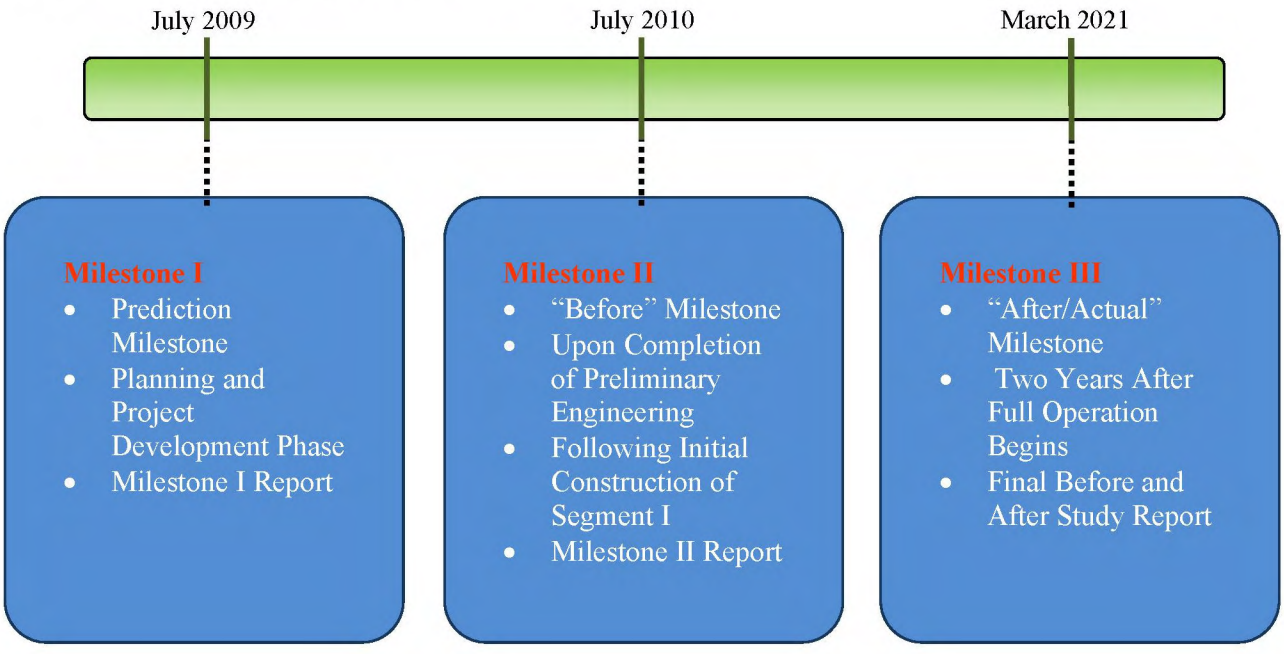
4.1 Before and After Study Plan

This Plan and schedule are based on RTD's intent to deliver the guideway for Segment I under a Design-Build contract and deliver Segment II through Segment IV utilizing multiple Design-Bid-Build contracts. The stations in Segment I will also be delivered using multiple Design-Bid-Build contacts. As described below, the Plan will document the predictions that were made during the Alternatives Analysis (AA) and EIS planning phases, which includes conceptual engineering and at completion of PE. The Plan will also document actual data for the "after" condition. The data and information that will be obtained for purposes of the Study will rely primarily on various project reports and related updates required by FTA as part of the New Starts process. In addition, the Study will rely on data and information from Project planning documents related to the AA and EIS phases, and Project engineering plans, specifications and operating plans developed during PE and Final Design. The Plan assumes that methodologies and assumptions used to develop Project capital costs, operating and maintenance costs, and ridership forecasts, including updates of these items as the Project proceeds through the project development process, have been approved by FTA, and therefore are the underpinning of the data and information reported in the Milestone Reports.

Finally, this Plan anticipates that the Milestone Reports will be written concisely and will maximize the use of graphics, tables and charts to report information. In addition, sources of data and information will be documented for purposes of providing the reader the ability to obtain referenced Project documents that contain greater detail than what may be reported in the Milestone Reports. The objective of this approach is to avoid duplication of information already available as part of the Project record.

As shown in Figure 4-1, Study milestones are planned to be submitted as described in the following section.

Figure 4-1: Before and After Study Schedule
Honolulu High-Capacity Transit Corridor Project



4.2 Reporting Milestones

In accordance with FTA Before and After Study Plan guidelines, data will be gathered and reports prepared at the three Study milestones described below.

Milestone I: The Planning and Project Development Predictions – The Milestone I Report will include forecast data and information on Project characteristics based on information derived from the Project's PMP, AA, Final EIS and related conceptual engineering and technical reports.

The general format of the Milestone I Report will consist primarily of tables and figures to convey project data/information on the study factors and will establish the format for use in future milestone reports. Each cell within the tables(s) will contain summary descriptions or end result numbers as appropriate. The objective of presenting information in table format is to provide a quick and visual presentation and comparison of project characteristics and related changes that may occur over the course of the Study. This report will contain a detailed written description of the Project scope, including mapping of the Project alignment, stations and other features. Technical information related to Project scope, costs and ridership will rely on the most current version of the following Project documents:

- Project Management Plan (PMP)
- Vehicle Fleet Management Plan

- Financial Plan
- Capital Cost Estimate
- O&M Cost Estimate
- Bus Operations Plan
- Systems Operating Plan
- Alternatives Analysis (AA)
- Environmental Impact Statement (EIS)
- Conceptual Engineering Plans

This report assumes that FTA will have conceptual engineering design plans and project information as part of the PE submittal and therefore the Milestone I Report will compile, but not duplicate this information. This Milestone Report will document existing (2007) conditions and 2030 projections on study variables described in Section 4.3.

The Milestone I Report and other relevant project documentation will be submitted to FTA soon after the application to enter Preliminary Engineering has been submitted.

Milestone II: The Before Conditions – The Milestone II Report will document any changes to the Project study factors, including changes to the project description, that may have occurred during PE and before approval to enter Final Design is received in April 2010. This Milestone Report will rely on updates to project documents listed in Milestone I as well as final PE plans developed for the Project.

The RTD does not intend to conduct an on-board survey prior to submittal of the Milestone II Report. As FTA is aware, RTD conducted an on-board survey to validate the travel forecast model during the AA phase of the Project. This survey, which was finalized in December 2006, collected 14,609 questionnaires at a cost of approximately $420,000. The survey sampled all bus service types. The RTD believes that a second on-board survey is not needed at this point in the project development process, since the first survey is just over two years old and should be valid for another three years, barring any significant changes to the Project description.

This report will be submitted upon conclusion of PE and shortly after construction has commenced for the Segment I Design-Build contract, which is planned to start construction in December 2009.

Milestone III: The After/Actual Conditions – The Milestone III report will serve as the Final Report summarizing the actual Project results that exist two years after

operations of the entire Project has begun (March 2021) and comparing these results with the Milestone I predictions and Milestone II "Before" conditions.

This report will contain the results of an on-board survey that will be undertaken for this Milestone. The RTD will discuss with FTA the survey objectives to be achieved for this final survey. This Milestone Report will rely on updates to project documents listed in Milestone I as well as changes that have occurred since completion of PE and Final Design.

The Final Report will include:

- Reports of certain project characteristic data and information at the planning and development stages, just after initial construction of Segment I, and two years after operations commence on the full 20-mile Project;
- Analysis of the data and information comparing the actual Project results with predicted data from previous Milestones to understand and explain the impacts of the Project and any variations between predicted and actual values.
- Recommendations to improve the reliability of the predictions for use in future New Start projects.

The Final Report will be submitted to FTA in spring 2021, since the last Project segment (Segment IV) is scheduled to open in March 2019.

4.3 Report Data for Milestones

As project sponsor, the RTD is responsible for collecting and reporting existing and available data for the Milestones described in Section 4.2. The RTD PExec will delegate this responsibility to the BASC. The BASC will coordinate with various individuals, such as internal staff, consultants, or contractor personnel. This data will pertain to forecasts of the Project's characteristics including:

- Physical Scope
- Service Levels
- Capital Costs
- Operation and Maintenance Costs
- Ridership
- Ridership Patterns
- Revenues

The most current data/information that is available at the time of the various Milestone reports will be collected and included. No new data or original research will be generated as part of the completion of the respective milestone reports. The specific data to be collected is described in more detail in the following subsections.

4.3.1 Physical Scope

The specific physical scope of the Project will be obtained as listed in Table 4-1.

Table 4-1: Physical Scope Data Collection Plan

Characteristic	Type of Information	Source of Potential Data Available
Mode	Technology text description	Final EIS; Technology Report (Feb.2008)
Alignment	Text description and maps	Alignment plans and profiles; As-built drawings; Right-of-way maps; Alignment Design Criteria
Right-of-way	Property acquisition information	Real Estate Acquisition Management Plan (RAMP); Conceptual and PE alignment plans; Final EIS, Right-of-way plans
Guideway	Guideway characteristic;	Final EIS, Chapter 2; Project Management Plan; Guideway Design Criteria; Guideway Drawings; Guideway Renderings
Stations	Number and location of stations	Final EIS, Chapter 2; Project guideway aerial map showing station locations
Station platforms	Platform dimensions	Project plan and profiles; As-built drawings; Station Site Plans (Milestone III only)
Station features	Descriptive features common to all stations	Architectural Design Criteria; Architectural design drawings; Renderings; As-built drawings (Milestone III only)
Park & Ride and Transit Centers	Number and location of Facilities; Size of facilities	Final EIS; Project map showing park & ride facility locations; Architectural design drawings; As-built drawings (Milestone III only)
Maintenance / Storage Facility	Location and capacity	Project MSF Design Criteria; Architectural design drawings; As-built drawings (Milestone III only)
Traction Power Substations (TPSSs)	Number of TPSSs	Final EIS; Project Management Plan; Design Criteria; Traction Power Schematic; Power Simulation Report; As-built drawings (Milestone III only)

The RTD has contracted with a GEC (PB Americas) to perform the environmental analysis, conceptual engineering, and PE for the Project. The GEC will provide the data and information needed to complete the Milestone I and II reports, which represents the Planning and Project Development predictions and "Before" conditions of the study. The RTD will hire a General Construction Manager (GCM) to oversee the construction of the Project. The GCM will be the point of contact for the physical scope characteristics for the After/Actual Milestone III Report. If another entity ultimately assumes responsibility for operating and maintaining the Project, that entity will be the point of contact for the final physical scope once full operations begin.

4.3.2 Service Levels

Data on existing and proposed transit service (bus and rail) and the service levels for the Project will be obtained and reported at each Milestone. Table 4-2 lists the data that will be reported and source of data/information.

Table 4-2: Service Levels Data Collection Plan

Characteristic	Type of Information	Source
Existing and future bus service	Description of: vehicle hours of service; miles of service.	Public Transit Division; National Transit Database (NTD) Reports; Bus Operations Plan
Existing and future bus fleet	Bus fleet characteristics; size of fleet	Public Transit Division; NTD Reports; Bus Operations Plan
Future rail service	Vehicle revenue; hours of service; revenue miles hours of operation; operating headways; speed	Transportation Technical Report (RTD 2008); NTD Reports; Final EIS; Rail Operations and Maintenance Plan
Rail vehicle fleet and capacity	Number of vehicles and capacity	Rail Operations and Maintenance Plan

Existing service level data will be readily available from Department of Transportation Services' (DTS) Public Transit Division (PTD). The PTD is also responsible for preparing the National Transit Database (NTD) reports.

RTD's GEC Consultant will prepare projections for future rail and bus interface service during the planning and PE Project phases.

Actual data reporting for the rail system will be handled by the rail systems operator, once operations begin. Actual data reporting for the bus system will be provided by the bus system operator.

The Table 4-3 and Table 4-4 are examples of how some of the service level data for the Project and bus system will be recorded for the Study.

Table 4-3: Planned Rail Headways for the Project (Example)

Time of Day	Weekday	Saturday	Sunday/Holiday
4AM-6AM	XX mins		
6AM-9AM	XX mins		
9AM-3PM	XX mins		
3PM-6PM	XX mins		
6PM-8PM	XX mins		
8PM-12AM	XX mins		

Table 4-4: Estimated Rail Operating Speeds (Example)

Operating Speed	MPH
Average speed including dwell time:	XX
Maximum speed	XX

4.3.3 Capital Costs

The RTD will report preliminary capital cost estimates based on FTA's Standard Cost Categories (SCC). The predicted capital costs for the Milestone I report will be based on the capital cost contained in the Project's Financial Plan that will be submitted as part of the application for entry into PE. Predicted costs for the Milestone II report will be based on the updated Financial Plan that will be submitted with the application to enter into Final Design. Finally, the capital costs for Milestone III will be based on the Project's final close-out report.

The following Table 4-5 summarizes the specific cost categories to be included in the Before and After Study and provides an example of the format that will be used to report the data.

Table 4-5: Capital Cost Estimate

	Year of Expenditure $ (millions)		
FTA Standard Cost Category	**Milestone I**	**Milestone II**	**Milestone III**
10 Guideway and Track Elements			
20 Stations, Stops and Terminals			
30 Yard, Shops, Administration/Support Facilities			
40 Site work and Special Conditions			
50 Systems			
60 ROW, Land, Existing Improvements			
70 Vehicles			
80 Professional Services			
90 Unallocated Contingency			
Finance Charges			
Total	$		

The Milestones I and II cost estimates for the items listed in Table 4-5 will be developed by RTD's GEC Consultant. The detailed project cost estimates for each project element will be preserved as a reference document.

For the After/Actual Milestone III Report, the actual expenditure figures will be available from the GCM and/or a representative at DTS to be designated by RTD, if RTD is the agency that ultimately operates and maintains the project. These cost figures will be documented in this report, which will be the Final Report.

4.3.4 Operating and Maintenance Costs

The Operating and Maintenance (O&M) costs for Milestones I and II will be reported based on the Project's most current Financial Plan and related updates, if any, to the *Memorandum on O&M Cost Models*. The costs updates associated actual costs (Milestone III) will be maintained and reported by the Core Systems Contractor who also will provide this data for use in the annual Section 5309 New Starts report. Other source information will come from the annual NTD reports. As shown in Table 4-6, operating costs will be reported individually for rail, bus and paratransit services.

Table 4-6: Project Operating Costs

Data	Project Planning (Prediction) Milestone I	Project Development Milestone II	Project After/ Actual Costs Milestone III
Rail System			
TheBus			
TheHandi-Van			

4.3.5 Ridership

Ridership will be obtained for the transit system as a whole and for the Project. For Milestone I, rail ridership projections and supporting data will be reported using data completed for the Final EIS; for Milestone II, data will be obtained from the travel forecast update that will be prepared at completion of PE, just prior to entry into Final Design. An on-board survey would be completed approximately one year before completion of the Milestone III report as part of the travel demand model update required for the Study. The approach to the on-board survey would be similar in scope to the 2006 survey that was conducted.

The travel demand forecasting model used by the O'ahu Metropolitan Planning Organization (O'ahuMPO) for the O'ahu Regional Transportation Plan 2030 (ORTP) was used as the basis for estimating ridership for the Project. The O'ahuMPO's existing model was reviewed, enhanced, recalibrated and validated consistent with current FTA guidelines. For the purpose of this Project, the model was refined and augmented to better represent transit ridership. This refinement included the on-board survey discussed above. The City will maintain a computer, with appropriate operating system and peripherals, to allow for the use of the current suite of travel models in the future.

TheBus transit service and TheHandi-Van paratransit service are both controlled by PTD, but operations are contracted to a non-profit organization, O'ahu Transit Services (OTS). Ridership figures for the bus and paratransit system will be obtained during planning, just after construction begins for Segment I, and 2 years after full operations commence from DTS-PTD. Although most of the bus related data collected by PTD is reported to FTA on an annual basis, it should be noted that ridership datasets are generated and reported monthly.

Table 4-7 summarizes the ridership data that will be collected for the Before and After Study.

Table 4-7: Ridership Data Collection Plan

Characteristic	Type of Information	Potential Data Available
Projected rail ridership (2018)	Range of 2018 rail only boardings in opening year for all Milestones; reporting of rail data by station will be prepared for Milestones II and III only.	Final EIS; output of travel demand model prepared for the Final EIS; update of travel demand model runs at Final Design
Projected system wide ridership (2018)	Range of predicted boardings (bus and rail) in opening year.	Final EIS; update of travel demand model runs at Final Design and 2 years after full operations commence.
Projected rail ridership (2030)	Range of predicted rail boardings in design year by station and overall.	Final EIS; update of travel demand model runs at Final Design
Projected system wide ridership (2030)	Range of predicted boardings (bus and rail) in design year by station and overall	Final EIS; update of travel demand model runs at Final Design
Actual ridership (2020)	Actual bus and rail ridership 2 years after full revenue service began.	New travel demand model run based on new on-board survey completed in approximately 2020.

Data regarding existing TheBus and TheHandi-Van ridership will be obtained from PTD's National Transit Database (NTD) reports submitted annually to FTA. Ridership and transfer projections will be prepared by the GEC for the Milestones I and II reports.

Summary results from the on-board survey will be publicly available from DTS records department. Actual ridership figures will be available from RTD (or whichever entity ultimately operates and maintains the HHCTCP system) once operations begin.

Table 4-8 provides an example of how ridership predictions would be reported during the "Before" and "After" Milestone stages.

Table 4-8: 2018 and 2030 Ridership Estimates (Example)

Ridership Measure	Milestone I	Milestone II	Milestone III
Existing bus ridership - 2007			
Total systemwide boardings			
Rail boardings only - 2018			
Rail boardings only - 2030			
Actual systemwide boardings			
Rail boardings only - 2020			
Rail boardings by station (2018*/2020/2030)			
Station A			
Station B			
Station C, etc.			

** Note: 2018 station ridership data will be reported for Milestone III only.*

4.3.6 Revenues

Data related to farebox revenue forecasts and actual revenues based on actual ridership, fare increases, and any discounted or group fare programs will be reported at each Milestone. Both forecast and actual fare revenues will be obtained from the current Financial Plan and O&M cost reports from the Core Systems Contractor, and relevant New Start annual report. Table 4-9 summarizes the plan for revenue data collection and related sources.

Table 4-9: Revenue Data Collection Plan

Characteristic	Type of Information	Potential Data Available
Existing Farebox Revenues	Pass Sales and Annual, Monthly, and Average Weekday Fare Revenues for Transit and Paratransit Service Table Totaling Various Types of Revenues	Department of Transportation Services (DTS) Financial Plan National Transit Database (NTD)
Projected Farebox Revenues	Pass Sales and Annual, Monthly, and Average Weekday Fare Revenues for HHCTC, the Entire System, and Paratransit. Table Totaling Various Types of Revenues	Financial Plan New Start Annual Report
Actual Farebox Revenues	Pass Sales and Annual, Monthly, and Average Weekday Fare Revenues for HHCTC, the Entire System, and Paratransit. Table Totaling Various Types of Revenues	O&M cost reports (from Core Systems Contractor) New Start Annual Report NTD

Farebox revenue projections will be prepared by the GEC.

Current revenues on the TheBus and TheHandi-Van services are detailed in the annual NTD reports prepared by the PTD contact listed in Section 4.2.2. Once operations begin, actual revenue data will be available from RTD or the rail systems operator for the Project.

For the After/Actual Milestone III Report, the actual revenues will be obtained from a representative at DTS to be designated by RTD, if RTD is the agency that ultimately operates and maintains the project.

4.4 Data Preservation Plan

An essential component of the Before and After Study is the collection and preservation of data over the development, construction, and operation of the Project. With the Project anticipated to begin full operation in March 2019, data collection and preservation will need to occur at certain milestones over an approximate 10 year period. Fortunately, the City maintains a strict document and data control process both for the Project and as part of the City's typical business practices. DTS already preserves much of the relevant data in the form of annual reports to the NTD, which will be readily available to the BASC.

Project Document Control

As sponsor of the Project, the RTD and the PMSC are responsible for the data and documentation of the Project as defined in the document control section of the PMP. A Document Control Plan has been developed and sets out detailed procedures for records management. A Document Control Manager or his/her designee is responsible for making certain that the integrity of Project records is maintained and that documents are stored, retrieved, reproduced and distributed efficiently and in accordance with project guidelines.

Preservation of Current Travel Model

As described in Section 4.3.5 above, the City will maintain a computer, with appropriate operating system and peripherals, to allow for the use of the current (used for Milestone I and Milestone II) suite of travel models in the future.

Public Transit Division (PTD) Data Collection and Reporting

The PTD regularly collects data regarding the existing transit and paratransit services in Honolulu, and uses it to prepare internal reports as well as NTD reports for FTA. The PTD stores and preserves all data pertaining to the operations, revenues, costs, and ridership of the existing bus system.

City Document and Record Tracking (DART) System and Xerox DocuShare Database

In addition to the project document control process, the City maintains a File Management System, which is accessible via the Intranet. The archiving system has established policies and procedures. The DART system includes a site entirely dedicated to DTS. Upon the completion of the Project phases, documents and data will be archived using this system and will be retrievable at any point during the Project's development and implementation.

4.5 Before and After Study Final Report

At the conclusion of the After/Actual Milestone III, the BASC will assemble all of the data reports from each of the reporting milestones and will complete a Before and After Study Final Report. This Final Report will include data/information reported in the Milestone I and II reports as well as new data/information collected after Final Design, as well as the actual conditions two years after project implementation (Milestone III). In addition to information from the Milestone Reports, the Final Report also will include analysis of the study findings and recommendations as described below.

4.5.1 Analysis Documentation

An analysis will be completed that will compare the actual conditions before and after project implementation in order to examine the reliability of Project predictions to actual conditions. The BASC will prepare tables and various graphics to illustrate the differences between the three Milestones of the Study. The analysis will include references to changes that may have affected predictions, such as changes in the Project scope, project costs, ridership, anticipated revenues, and other Project factors.

There are likely to be a number of forecast errors, given the uncertainty inherent in travel and cost predictions, and this interrelationship may make it challenging to precisely explain their origin. Difficulty notwithstanding, DTS and the BASC will make recommendations to FTA on how to improve the forecasting process so that, over time, the methods used by local agencies applying for New Starts funding will

progressively improve. At a minimum, the Study will include analyses of the forecasting methods used for service levels, capital costs, operating and maintenance costs, ridership, and revenues.

4.5.2 Findings and Recommendations

The findings and recommendations of the analysis portion of the Study will be included as part of the Before and After Study Final Report. The findings may be summarized in an annual report by FTA for distribution to other local agencies preparing New Starts applications in order to improve their forecasting efforts. The DTS and the BASC will prepare a draft Final Report for review and comment by the FTA. The FTA will then provide comments to the DTS, and a revised report that incorporates the comments will be prepared and submitted as the Before and After Study Final Report.

4.6 Before and After Milestone Schedule

The Before and After Study will proceed according to the Milestone schedule shown in Figure 4-1.